

***Eurhinocricus rosenbergi*, a new species of rhinocricid from the Caribbean island of Jamaica (Spirobolida: Rhinocricidae)**

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*Abstract.*—This paper describes a new species of Rhinocricidae, *Eurhinocricus rosenbergi*, endemic to the Caribbean island of Jamaica. In addition to the standard male gonopod illustrations we present scanning electron micrographs (SEM) and illustrations of the female genitalia, cyphopods, and SEM of the mandibles. This new species is rather novel morphologically, relative to other Jamaican *Eurhinocricus*, because of its large size and very distinct banding coloration. Based on anterior gonopod configuration we suspect that *E. rosenbergi* may be a close relative of the Mexican species *E. omiltemae* (Pocock).

The purpose of this short paper is to describe a new species of Jamaican *Eurhinocricus*. This interesting species, collected during the course of a terrestrial invertebrate biotic survey of Jamaica being undertaken by Dr. Gary Rosenberg of the Academy of Natural Sciences (Philadelphia), adds another species to the list of *Eurhinocricus* that compose the already diverse diplopod fauna of the island. At present, the rhinocricid genus *Eurhinocricus* Brölemann, 1903 (order Spirobolida) comprises 32 nominal species (Hoffman 1999) and is distributed throughout the New World Tropics with a large concentration of species on the Caribbean island of Jamaica (now 13 species).

Based on Hoffman's (1953 & 1955) delimitation of *Eurhinocricus*, the only synapomorphy for the genus is a unique conformation of the posterior gonopod characterized (Hoffman 1955:31) as being "a somewhat shortened appendage, its distal segment (the telopodite sensu Keeton 1960) composed of a long, acicular solenomere arising very near the coxal articulation, and

two slender subparallel rods joined by a membrane." In contrast, other rhinocricid genera have more slender, or even flagelliform, telopodites. The telopodite of the species that we describe in this paper clearly fits Hoffman's description and thus warrants placement in *Eurhinocricus*. However, it is important to note that without the aid of a phylogenetic analysis of all rhinocricid genera it is impossible to know whether this single genitalic feature truly defines a monophyletic group to the exclusion of all others or rather simply defines a monophyletic lineage that is paraphyletic with respect to some other larger aggregation of rhinocricid species. Additional phylogenetic studies of the Rhinocricidae are necessary to ultimately resolve this issue.

#### Terminology and Methods

Ocelli and setal counts are taken from the left side. Setal counts are listed from the tarsus to the prefemur. All measurements are given in mm. Millipede size is estimated by width taken at three points (segment

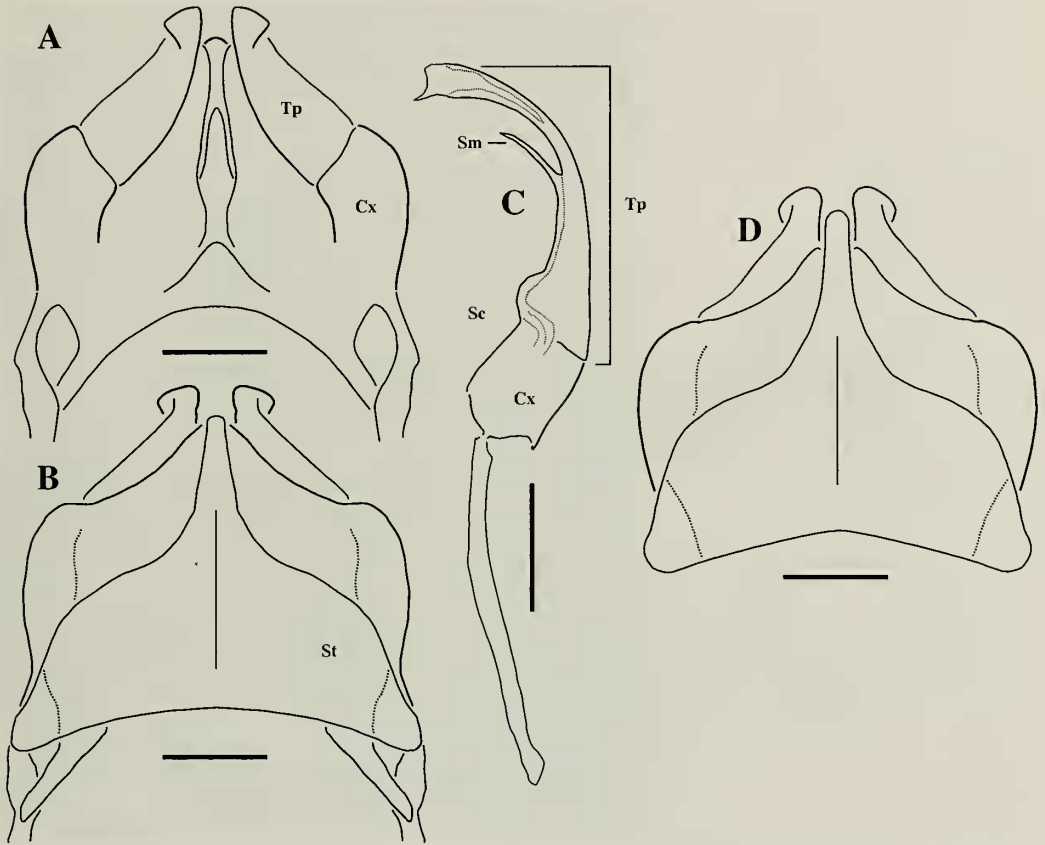


Fig. 1. *Eurhinocricus rosenbergi* new species, male genitalia. A–C, holotype. A. Anterior gonopod, posterior view. B. Anterior gonopod, anterior view. C. Left posterior gonopod, posterior view. D. Paratype. Anterior gonopod, anterior view. Scale bars = 1 mm. Abbreviations: Cx, coxa; Sc, seminal canal, Sm, solenomere; St, sternum; Tp, telopodite.

number given parenthetically after measurement), using digital calipers accurate to 0.01 mm. We use Keeton's (1960) terminology when describing female genitalic structures. Although this terminology may not reflect true homologies, we retain his nomenclatural scheme to ease comparisons between this work and those that are pre-existing. Specimens were prepared for scanning electron microscopy by cleaning with an ultrasonic cleaner, critical point drying and coating with gold. Muscle tissue was digested from mouth parts and genitalia using trypsin. Mouthpart terminology is from Köhler & Alberti (1990) summarized in Hopkin & Read (1992). The Field Museum of Natural History is abbreviated as

FMNH and The Field Museum Millipede Collection is abbreviated as FMMC.

*Eurhinocricus rosenbergi* new species  
Figs. 1–4

*Type material.*—Male holotype and female paratype, deposited in the Field Museum of Natural History (FMNH; FMMC# 2376) collection, from Jamaica, Trewlany Parish, Cockpit Country, South of Caledonia, Pantrepant to Quickstep Trail, elevation 360 m, 18°20.51'; 77°41.02'W (colls. G. Rosenberg and D. Holmes, 23 May 2000). Male paratype, deposited in the Institute of Jamaica in Kingston Jamaica (FMMC# 2430), from Jamaica, St. Ann Parish, Re-

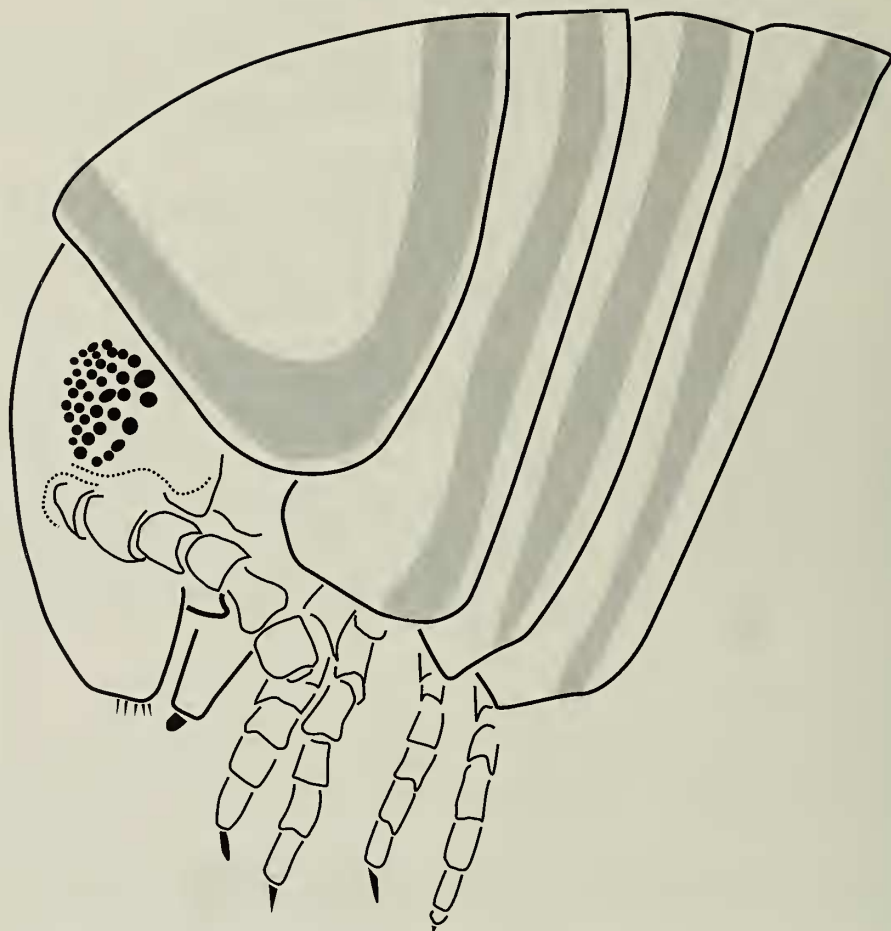


Fig. 2. *Eurhinocricus rosenbergi*, new species, female paratype. Pigmentation pattern of head and segments 1–4, lateral view.

tirement, elevation 611 m,  $18^{\circ}17.73'$ ;  $77^{\circ}23.45'W$  (colls. I. Muratov and C. Schubart, 10 October 2000).

*Additional material examined.*—Jamaica: St. Ann Parish: North of Grants Bailey, elevation 747 m,  $18^{\circ}15.46'$ ;  $77^{\circ}24.88'W$  (colls. G. Rosenberg, D. Holmes, and S. Koenig; 18 October 2000), 1 female (FMMC# 2471); Southwest of York Castle, elevation 726 m,  $18^{\circ}15.61'$ ;  $77^{\circ}13.74'W$  (colls. G. Rosenberg and D. Holmes, 17 October 2000), 1 female (FMMC# 2465); Irons Mountain, elevation 750 m,  $18^{\circ}17.63'$ ;  $77^{\circ}09.24'W$  (colls. I. Muratov and D. Holmes 11 October 2000), 1 juvenile (FMMC# 2434); Richmond Pen, ele-

vation 508 m,  $18^{\circ}20.31'$ ;  $77^{\circ}27.03'W$  (colls. G. Rosenberg and J. Bond, 21 October 2000), 1 female (FMMC# 2479).

*Etymology.*—The specific epithet is a patronym in honor of Dr. Gary Rosenberg who was the first person to collect this new species and bring it to our attention.

*Diagnosis.*—A large *Eurhinocricus* species (length greater than 60 mm) with cream-colored segments and with males having the anterior gonopod sternum distally narrow.

*Description of male holotype.*—Head, antennae, and collum light brown, slightly darker than other segments. Collum with darker outer band, lighter emargination.

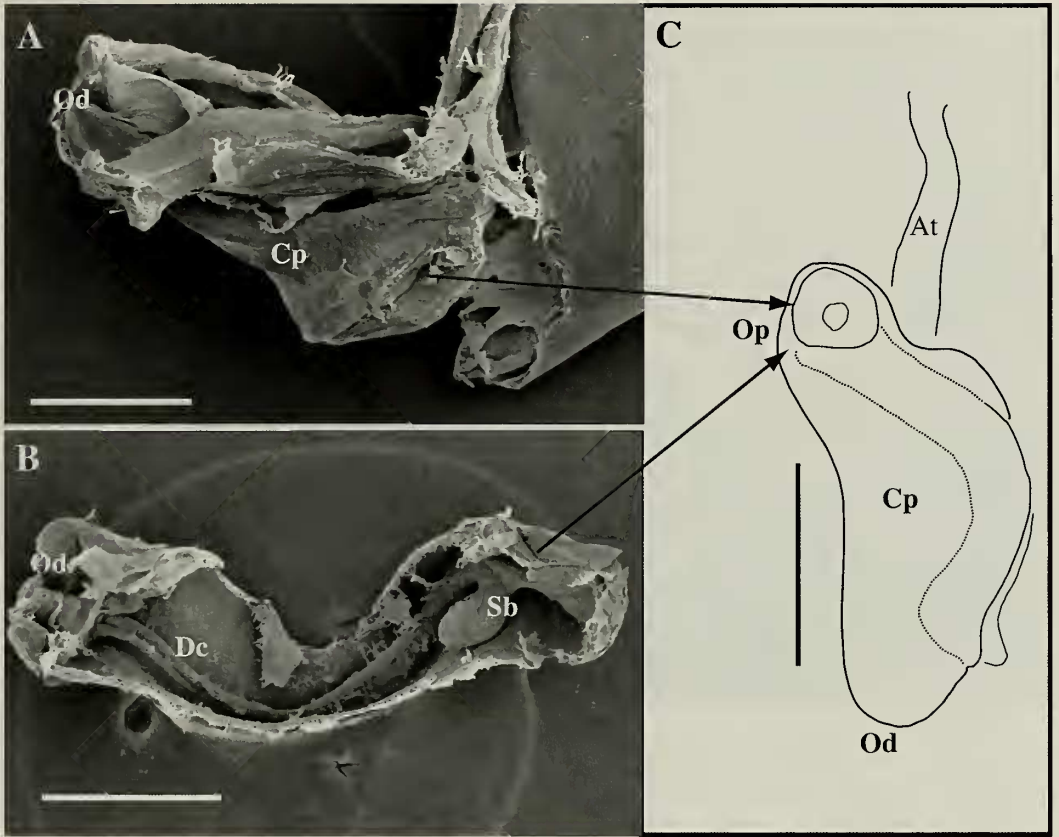


Fig. 3. Cyphopods. A. SEM, left anterior view, still attached to leg base. B. SEM, cleared cyphopod showing spermethecal bulb and duct. C. Diagrammatic representation of left cyphopod, side view. Arrows show orientation of operculum. Scale bars = 1 mm. Abbreviations: At, attachment point; Cp, caudal plate; Dc, duct; Od, oviduct insertion point; Op, operculum; Sb, spermethecal bulb.

All other segments distinctly banded. Prozonite light cream color, metazonite dark brown with light cream colored posterior margin. In live specimens legs are dark pink.

Antennae with four sensory cones, 11–11 labral setae, clypeal groove distinct, 35 ocelli. Width 7.50 (1)–9.31 (20)–8.05 (45), 50 ring segments. Leg I setal formula: 7–3–2–3–2; Leg II: 7–2–2–3–2. Tarsi lack ventral pads. Scobinae not formed as distinct pits but appear on the 7th–ca. 40th segment as a dorsal pair of light scars (scobinellae [?], Hoffman 1998). Epiproct short, does not extend beyond paraprocts. Hypoproct short, triangular with blunt terminal end, does not extend beyond paraprocts.

Anterior gonopod and telopodite as illustrated in Fig. 1. Sternum narrow distally (Figs. 1B, 1D), coxae (Cx) and telopodite (Tp) as in other rhinocricids (Fig. 1). Posterior gonopod telopod (Tp, Fig. 1C) is spatulate with a membranous interior. Seminal canal (Sc) is visible extending from the coxae (Cx) to the solenomere (Sm). Seventh segmental ring posteriorly ventrally modified as a postgenital bar to accommodate gonopods.

*Size variation, male paratype.*—Labral setae 11–10, 29 Ocelli, Width 8.22 (1)–9.68 (20)–9.05 (48), 53 ring segments including the epiproct.

*Description of female paratype.*—Coloration as described for males (Fig. 2). Antennae with four sensory cones, 10–11 la-



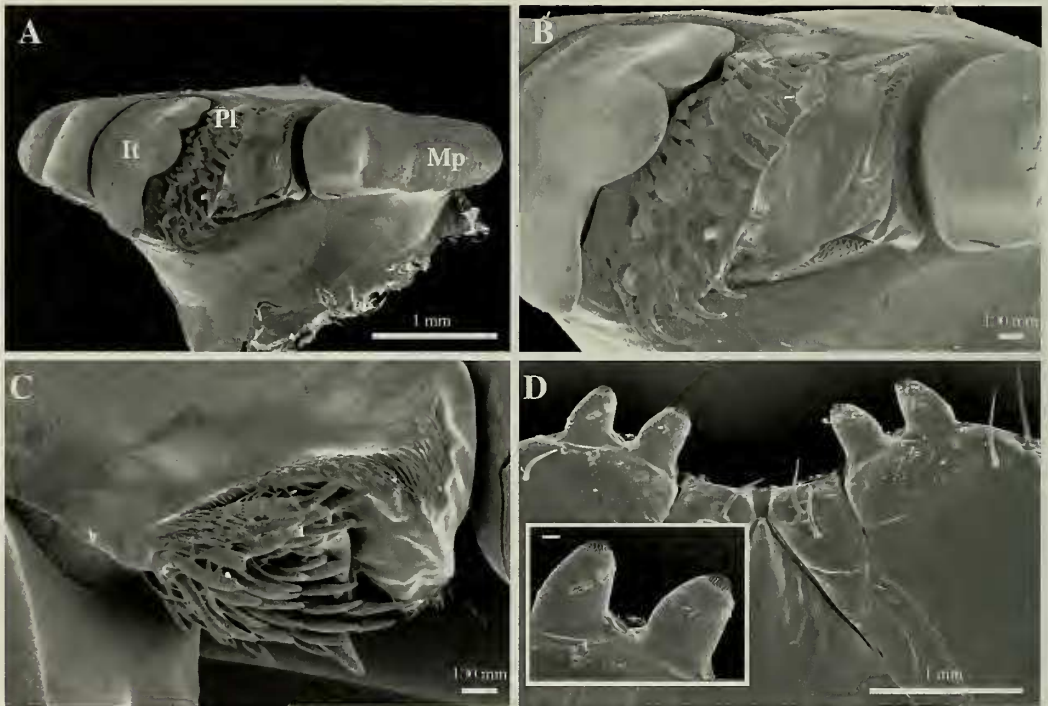


Fig. 4. Female mouthparts, SEM. A. Left mandible, lateral, inner margin. B. Enlargement of left mandible, inner margin. C. Right mandible, ventral view. D. Distal extremity of gnathochilarium, ventral view (inset: enlargement of right distal margin, scale bar = 1 mm). Abbreviations: It, intermediate teeth; Mp, molar plate; Pl, pectinate lamella.

bral setae, clypeal groove distinct, 34 ocelli. Width 9.84 (1)–12.63 (20)–11.42 (45), 53 ring segments. Leg I setal formula: 7–3–2–3–3. Scobinae not formed as distinct pits but appear on the ca. 14th segment as a dorsal pair of light scars, much less prominent than in males. Epiproct slightly longer than in males extending up to but not beyond paraprocts. Hypoproct larger than in males with a much more rounded terminus, does not extend beyond paraprocts.

Cyphopods as illustrated in Fig. 3. These are very simple, sclerotized structures comprising two caudal plates (Cp), lacking setae, which open ventrally via a lightly sclerotized operculum (Op) (Figs. 3A, 3C). Internally (Fig. 3B) they consist of what appears to be a ventral blind sac, or spermethecal bulb (Sb), that may open through to the outside by way of the operculum and is connected dorsally via a duct (Dc).

Figure 4 illustrates female mouthpart morphology. This species' mandibles (Fig. 4A–C) have a reduced, non-prominent external tooth, the internal tooth (It) row consists of three large, rounded teeth. The pectinate lamella (Pl) consists of ca. 5 loose rows of large spines. Molar plate lacks a distinct anterior fringe. Gnathochilarium (Fig. 4D) is as described for other spirobolidans (e.g., Keeton 1960).

*Female size variation.*—Ring segments 51–54, including the epiproct. Width [9.63–10.47]–[11.08–12.3]–[10.47–12.12].

*Systematics.*—*Eurhinocricus rosenbergi* males have a distally narrow anterior gonopod sternum, whereas the distal aspect of all other described *Eurhinocricus* males are much broader. The exception is *E. omiltemae* (Pocock 1907) that likewise has a distally narrow anterior gonopod sternum but is much smaller (total length 41 mm) and has segments that are uniformly black (Po-

cock 1907). Although Pocock's drawings and descriptions are very thorough it would have been ideal to have examined the holotype of *E. omiltemae* from Omilteme, Mexico. Unfortunately, it is presumably lost and Pocock's description cannot be physically confirmed. We must point out though that independent of a *Eurhinocricus* species phylogeny any hypothesis regarding intrageneric relationships must be viewed as highly speculative. However, if these two species are sister taxa the discovery of this new species may be important since it could potentially represent the phylogenetic connection with Central America and Mexico. Such a hypothesis predicts that *E. rosenbergi* will be basal in the Jamaican *Eurhinocricus* phylogeny.

#### Acknowledgements

This project was supported by National Science Foundation (NSF) PEET grant DEB 9712438 to P. Sierwald and W. Shear and NSF grant DEB 9870233 to G. Rosenberg. The government of Jamaica provided collecting permits G. Rosenberg.

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